THE SOUTHERN POTATO WIREWORM IN CALIFORNIA (COLEOPTERA: ELATERIDAE)

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Abstract

The southern potato wireworm (*Conoderus falli* Lane), a destructive pest of vegetable crops in southeastern U. S., has been present in southern California since 1963. Preliminary findings indicate that the times of beginning and peak adult emergence and the duration of stages compare favorably to results obtained in studies in the southeast. The species appears to be well adapted climatically to southern California.

The southern potato wireworm *Conoderus falli* Lane is a destructive pest of potatoes, tobacco, and vegetable crops in southeastern U.S. Progress in the control of this pest has been slowed due to its resistance to certain soil insecticides (Reid and Cuthbert 1956). In California adults of this species were first collected in May 1963 by E. I. Schlinger in Deep Canyon near Palm Desert, in an area with desert type vegetation (Stone 1975). They were collected in June at Cathedral City and at Indio and Riverside in 1966. In addition to the above localities, all in Riverside County, adults have been received from Orange, San Diego, and Fresno counties.

In the southeastern U. S., *C. falli* occurs in all coastal states from Virginia to Texas (Stone 1975). The biology of this insect in the southeastern states has been studied in great detail by Day *et al.* (1971). Its presence in Riverside permitted me to obtain preliminary data on seasonal abundance and the effects of possible climatic change on the biology of this insect in California.

Catches of *Conoderus falli* adults at light (1973-76)

Data on adult activity were obtained from a 15 watt fluorescent black light located on the back of a building adjacent to a bare field formerly planted to citrus. Adults were collected nightly usually between 8 and 9 p.m. In 1973 adults were active in the period May 27 to October 17 and were most numerous in September. In 1974 adults appeared on May 15, reached a peak in August, and ceased activity October 18. In 1975 first and last collections were made on May 1 and October 5. Most of the beetles were collected in July and August. The earliest catch of adults at light occurred April 30, 1976 when day temperatures reached 90°F. Five of the 7 adults collected were females.

The above data were based on collections of 302, 436, and 440 adults in the years 1973-75 inclusive. The catches of adults on a monthly basis are shown in fig. 1.

Collections of adults nightly varied depending upon temperature. Only 1 or 2 adults were collected all evening at temperatures of 65°, whereas at 78°F. as many as 39 adults were taken in a few minutes. In light trap studies by Day *et al.* (1971) in South Carolina, in areas of excessively high populations the largest catches of adults were obtained in July and August as was true in Riverside.

Life History Studies

The duration of the larval period of *C. falli* was determined by confining newly hatched larvae individually in 2 ounce salve tins in moist 30 mesh soil, with from 2 to 5 kernels of wheat depending upon size; food was replenished at 2 week intervals. The larvae were confined indoors where temperatures varied from 65 to 78°F.

Of 27 larvae which hatched August 15, 1975, 22 pupated the same year between October 6 and November 21. In this group the pupae transformed to adult between October 20 and December 9. The larval period ranged from 52 to 98 days, averaging 74 days. The pupal period varied from 15 to 18 and averaged 16 days. The 5 remaining individuals in this group pupated the following year between May 26 and July 5, 1976. The larval and pupal stages averaged 308 and 14 days respectively. In southern potato wireworm rearings at Charleston, S. C. (Day *et al.* 1971), fewer (15 to 18%) of August hatched larvae matured the first year.

In the southeast, larvae hatching late in the season, after September, usually overwinter and mature the next spring or summer. To determine if larval development was affected similarly in Riverside, a group of 21 larvae which hatched late, on October 8, 1975, were reared on wheat as described previously. The results showed a similar trend in that 38% of the larvae completed development in May, 43% in June, and 19% in July of the following year.

In this late hatch group the larval stage ranged from 175 to 281 and averaged 244 days. The pupal period ranged from 15 days in May to 10 days in July and averaged 13 days.

Longivity of *C. falli* Adults

Adult longevity was determined by confining laboratory reared adults in glass jars with thin slices of carrot which were renewed at weekly intervals. Of 6 adults which had transformed November 7, 1975 and which were confined as above, one died 5.8 months later on April 29. Three died in May and two on June 22 after 7.6 months in the adult stage. Of the many elaterids reared by me, this species has by far the longest active adult stadium.

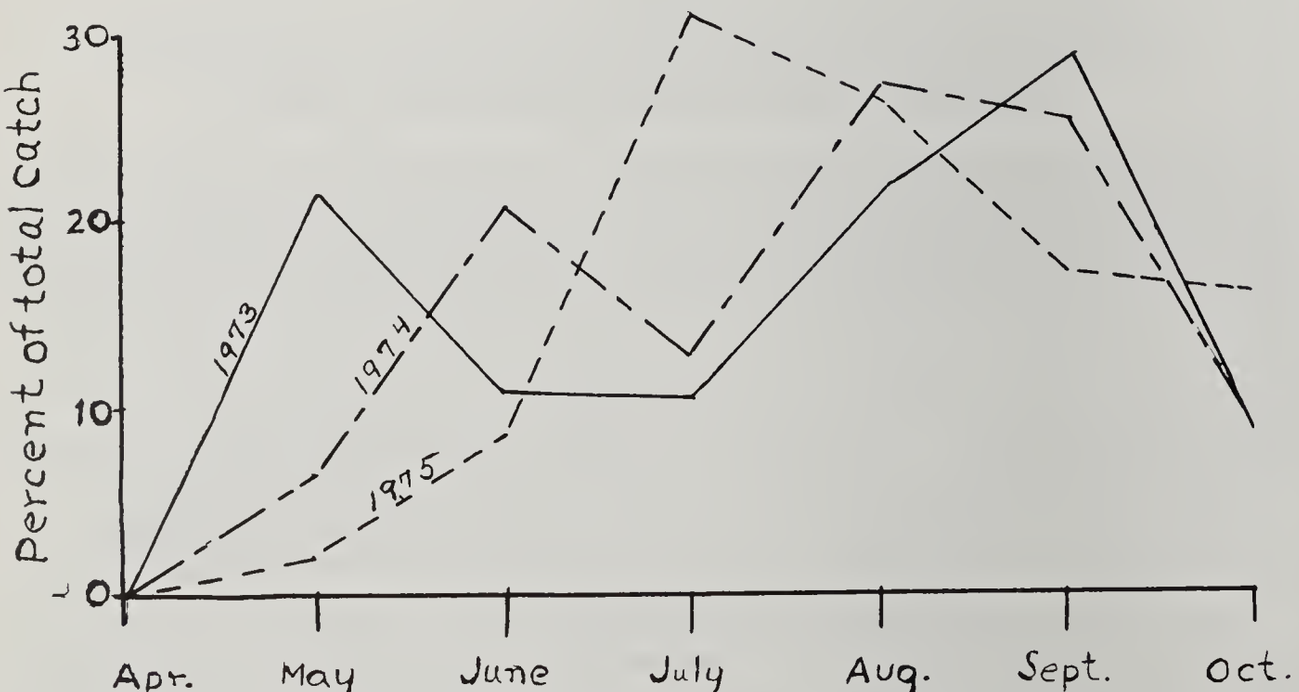

Fig. 1. Monthly catches of *Conoderus falli* adults at black light, Riverside, CA, 1973-75.

Preliminary findings concerning emergence and time of beginning and completion of stages of the introduced southern potato wireworm in California compare favorably to findings in the southeastern states. The species appears to be well adapted climatically to this area and only time will determine its destructiveness.

Acknowledgments

My thanks to J. Wilcox for his interest and helpful suggestions and for operating a light trap and collecting elaterids at Olive (Orange Co.). Thanks also to Saul Frommer, University of California, Riverside, for his critical review of the manuscript.

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